WHAT IS CLAIMED IS:

1. An electro-absorption optical modulator comprising:

an absorption layer;

upper and lower clad layers formed on upper and lower portions of the absorption layer, respectively; and

electrodes for applying an electric field to the absorption layer,

wherein the absorption layer is constructed by combination of two quantum wells having a width different from each other.

2. The electro-absorption optical modulator as claimed in claim 1, wherein the quantum wells are combined by the quantum well having a narrow width and the quantum well having a wide width at a ratio of $m : n$ ($m > n$).

3. The electro-absorption optical modulator as claimed in claim 2, wherein the quantum well having the narrow width has a value of a greater than that of the quantum well having the wide width in the following equation.

$$P_{out} = P_{in}\exp(-(V/V_0)^a)$$

4. The electro-absorption optical modulator as claimed in claim 3, wherein the quantum well having the narrow width has the value of a greater than that of the quantum well having the wide width by at least 0.5.

5. The electro-absorption optical modulator as claimed in claim 1, wherein the absorption layer is made from an InGaAsP based material.

6. The electro-absorption optical modulator as claimed in claim 1, wherein the lower clad layer is formed of a semiconductor substrate.